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THE VALUE OF FORESTRY IN A COURSE OF NATURE STUDY

By Elizabeth Carss

Until very recently, little or no attention was paid to the care of our forest trees or to the relation of our forests to water supply and soil preservation. Forests were cut only for immediate gain with no regard to future productiveness. Tracts of land were also carelessly burned and no means taken to prevent such occurrences. The consequence is that many districts once covered by forests are now barren wastes of stumps. Farms are often seen where a good wood patch has been so reduced as scarcely to provide the household fuel. I recall one farm in northern New York where the only plot of woodland that the farmer possessed has been almost entirely cut away within the last five or ten years. At first, as the wood was abundant and the farmer felt no particular need for economy, the cutting was done in a most wanton manner. Tall stumps forty and fifty inches in height have been left, and great tree trunks have been felled and left to decay, often crushing small trees in their fall. In the same region there are two striking examples of hillsides that have been cut and burned to the ground to form "pasture." The result is scarcely satisfactory even for sheep. The soil at best was very scant and the hard rock ledges formed uneven masses to which soil could not cling without the aid of vegetation.

It is not difficult to find many illustrations of such destruction as has been described, which is the result of ignorance and con-

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sequent short-sightedness. Attempts are now being made to awaken the private owner to the necessity of care and proper management of forest areas, both for his own sake and for the interests of the country. The Division of Forestry of the Agricultural Department at Washington is making efforts to instruct owners of forest lands and to aid them in the care and preservation of such areas. To this end the Division has undertaken to provide a series of practical examples of improved treatment of private forest lands. The object of the undertaking is to show, by assisting a few owners to make a trial of new methods, that improved ways of handling timber lands are best for the owner and forest. The results of these experiments with private lands are to be published for the benefit of all.

In order that a reform may become vital in a country like this, it is necessary that the means of reform should reach not only those who are directly interested, but the many who influence the legislation of the country. The majority of people know nothing of the valuable government publications on the subject, nor appreciate the expenditure necessary for experimentation and publication of results.

How can the school aid in establishing among the people a proper estimate of the importance of the forests? We often hear that the aim of the school should be to promote social efficiency. To this end children are given calculations and illustrations from the life of trade and commerce, and are taught the ins and outs of a complex political life. While the value of this may not be disputed, there is here presented a very vital question in which both city and country children should be interested.

Elementary work in forestry may be approached through two parts of the school curriculum: geography and nature study. The subject may be introduced by simple study of trees. With very little children, only the recognition of some of the common trees by means of form, leaves, fruit and blossom, is possible. Later, the work may be expanded somewhat as suggested in the following outline originally prepared by the writer for the Teachers College Record:

I. Special tree study.

General form : branching, height and breadth of the tree.

Bark : Characteristic appearance. Does the tree shed the bark ?

Compare bark of the tree studied with other common trees.

Compare the bark of the needle-leaved trees with that of some of the broad-leaved trees.

Leaf : Compare the form with other leaves that have been studied. How is the leaf fastened to the stem ? Where are the leaf buds for next year ? Make a careful study of buds with their wrappings. When do the leaves fall and what changes take place in the leaf before its fall ?

Fruit : How fastened to the stem ? Where most abundant on the tree ? Kind of seeds produced by the tree ?

Germination of seeds : Recognition of seeds of the common trees. Allow the seeds to sprout and examine stages of growth. Brief account of nourishment and growth of trees.

Twigs : Prominence of certain buds and smallness of others. Development of buds on different parts of the twigs ; size, shape, color of buds ; shape and character of bud scales. Scars on the twigs. Leaf scars ; bud scars. Annual growth as shown by external markings ; compare growth of different years. Growth and development of branches.

II. Field work. Recognition of individual trees at different seasons. General outline for field work : difference in height of trees ; difference in foliage masses ; advantage of different types growing together ; trees that have the greatest number of branches ; results of crowding ; method of making a tree grow with a tall, straight trunk ; the effect upon the wood if numerous branches are allowed to develop ; method of cutting and pruning.

III. Care of trees and forests. Some ways in which destruction of forest areas has come about ; fires, careless cutting, etc., insect pests, fungus growths. Ways of preventing destruction.

Let some pupil write for pamphlets. Discuss the efforts that are being made to save the trees and forests. Compare our forest tracts with forest areas in Europe.

IV. Wild life in the woods. Make a list of some of the wild animals seen in the woods in which we have been, and speak of their interesting characteristics, enemies, means of protection, etc. Life in winter, snow tracks. Hunting centers of the United States.

V. Lumbering.

1. Lumbering regions and forest reserves : Where situated in

the United States? Characteristic trees of different regions. Relation of water supply and forests. Control of erosion by forests. The effect of extensive cutting upon distribution of soil. Examples of excessive erosion and excessive deposition of soil.

2. Lumber camps: Sites chosen—reasons. Why winter is a good time for cutting and hauling. Transportation from lumber camp.
3. Saw mills: Situation; power used for operation; ways of preparing wood.

VI. Woods. Examine woodwork in the school room. Notice the different grain found. What is the grain of wood? Why do pieces of wood differ so much in grain? Examine small logs of different woods cut in cross, longitudinal and radial sections. Growth of wood—meaning of rings in the wood; green layer under the bark; injury caused by girdling trees.

It is not supposed that this outline can be carried out in all schools, but it is believed that many valuable lessons can be given along such lines of thought as are here suggested. The work as it stands is very comprehensive and is intended to be distributed throughout a course of nature study and geography.

A large part of this has been in use in the Horace Mann School in New York and has been found of great interest to the boys and girls, and it is hoped that such study in the schools will lay the foundation for an intelligent interest in the problems of forestry in the United States, and thus aid in checking the destruction which has already attained alarming proportions.

A NEW HYGROMETER SUITABLE FOR TESTING ACTION OF STOMATA

By D. T. MacDougal

Light, temperature, electricity, mechanical shock, moisture of the soil, salts in the soil, humidity of the air, winds, and prolonged darkness, exercise an influence upon the guard-cells of stomata in such manner that the pore is closed or opened when